NPL-WA-2-229

N Market St
0541-101
WA

National Priorities List

Superfund hazardous waste site listed under the
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended in 1986

TOSCO CORP. (SPOKANE TERMINAL)
Spokane, Washington

Tosco Corp.'s Spokane Terminal covers 50 acres in an industrial area 1.5 miles north of Spokane, Spokane County, Washington. The site is a bulk storage tank farm for petroleum products. An oil refinery was on the site when Tosco purchased it in 1976. According to information Tosco provided to EPA, as required by CERCLA Section 103(c), lead containing wastes listed as hazardous under Subtitle C of the Resource Conservation and Recovery Act were disposed of on the ground and in holes, probably before 1970. The site overlies the Spokane Valley-Rathdrum Prairie Aquifer, which EPA has designated as a sole source of drinking water under the Safe Drinking Water Act.

Soil in an old waste oil lagoon in the northwest corner of the site contains high levels of lead, according to Washington Department of Ecology tests conducted in 1986. The soil overlying the aquifer is highly permeable, which facilitates movement of contaminants into ground water. Ground water within 3 miles of the site provides drinking water to over 200,000 people and is also used for irrigating croplands.

Facility name: TOSCO Corporation - Spokane Terminal

Location: East 3225 Lincoln Road, Spokane, Wa.

EPA Region: X

Person(s) in charge of the facility: D.F. Dykehs - Terminal Seperintendent

Name of Reviewer: R. Kievit, B. Morson Date: 5/29/87

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Slop oil emulsion wastes and leaded tank bottoms were disposed of on site prior to 1970. The site overlies a federally designated sole-source aquifer serving over 200,000 people within 3 miles

Scores: S_M = 32.61 (S_{gw} = 56.4 | S_{sw} = 0 S_a = 0)

S_{FE} =

S_{DC} =

Sm = 32.61

FIGURE 1
HRS COVER SHEET

9/18/87

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 (1) 2 3	2	2	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1	3	3	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			10	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0 1 2 3 (4) 5 6 7 8	1	4	8	
Total Waste Characteristics Score			22	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 30 32 35 (40)	1	40	40	
Total Targets Score			49	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			32,340	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 56.41		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

9/16/87

Route not scored

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1		45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
1-yr. 24-hr. Rainfall	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score				15	
3 Containment	0 1 2 3	1		3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1		18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				26	
5 Targets					4.5
Surface Water Use	0 1 2 3	3		9	
Distance to a Sensitive Environment	0 1 2 3	2		6	
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40	
Total Targets Score				55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{SW} =			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

9/18/87

ROUTE NOT SCORED

Air Route Work Sheet					
Rating Factor	**Assigned Value (Circle One)**	**Multiplier**	**Score**	**Max. Score**	**Ref. (Section)**
[1] **Observed Release**	0 45	1		45	5.1
Date and Location:					
Sampling Protocol:					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2] **Waste Characteristics**					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
[3] **Targets**					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [4] by 35,100 and multiply by 100		S_a =			

FIGURE 9
AIR ROUTE WORK SHEET

9/18/87

	S	S^2
Groundwater Route Score (S_{gw})	56.41	3182.09
Surface Water Route Score (S_{sw})	0	0
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		3182.09
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		56.41
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		32.61

FIGURE 10
WORKSHEET FOR COMPUTING S_M

9/18/87

ROUTE. NOT SCORED

Fire and Explosion Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100			S_{FE} =		

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

9/18/87

Route not scored

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	0 45	1		45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 3	1		3	8.2
3 Containment	0 15	1		15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5		15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 5	4		20	
Distance to a Critical Habitat	0 1 2 3	4		12	
Total Targets Score				32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{DC} =			

FIGURE 12
DIRECT CONTACT WORK SHEET

9/18/87

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

FACILITY NAME: Tosco Corporation - Spokane Terminal

LOCATION: East 3225 Lincoln Road

DATE SCORED: May 29, 1987

PERSON SCORING: R. Kievit, B Marson, P. O'Flaherty

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):
EPA CERCLIS files, WDOE Eastern Regional Office files, Phase I and partially completed Phase II Remedial Investigation by Golder Assoc.

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

COMMENTS OR QUALIFICATIONS:

9/18/87

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Rationale for attributing the contaminants to the facility:

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:
SPOKANE VALLEY - RATHDRUM PRAIRIE AQUIFER

FEDERALLY DESIGNATED SOLE-SOURCE AQUIFER SERVING ALMOST 200,000 PEOPLE WITHIN 3 MILES OF THE SITE.

REFERENCE 3, 5 + 13

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

147 FEET

REFERENCE 19

Depth from the ground surface to the lowest point of waste disposal/ storage:

Lead detected in bore hole TP-8, Sample was composite of 0-8 foot depth of bore hole. Conservative value of 0 feet used as bore hole was collapsing at time of 8 foot sample.

Ref 21

HRS score = 1

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Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):
12.21 INCHES (NOVEMBER 1 THRU APRIL 30)

REFERENCE 11.

Mean annual lake or seasonal evaporation (list months for seasonal):
6.84 INCHES (NOVEMBER 1 THRU APRIL 30)
YEARLY LAKE EVAPORATION IN THIS AREA IS 38 INCHES. 18% OF THE YEARLY PAN EVAPORATION OCCURS FROM NOV. 1 THRU APR. 30. THE REFERENCE INDICATES THAT THIS PERCENTAGE SHOULD APPLY TO THE YEARLY LAKE EVAPORATION ALSO.
38" X .18 = 6.84"
REFERENCE 11.
Net precipitation (subtract the above figures):
5.37 INCHES (12.21" - 6.84" = 5.37")

HRS SCORE: 2 (USER'S MANUAL, PG. 12)

Permeability of Unsaturated Zone

Soil type in unsaturated zone:
SAND WITH SOME GRAVEL AND TRACES OF SILT.

REFERENCE 19.

Permeability associated with soil type:
$> 10^{-3}$ cm/sec

HRS SCORE: 3 (USER'S MANUAL PG. 15)

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

SUBSTANCES DISPOSED WERE SLOP OIL EMULSION WASTES AND LEADED TANK BOTTOMS WHICH WERE IN THE FORM OF SLUDGES.
REFERENCES 3 AND 15. (Ref 12,13, 14)
HRS SCORE: 3 (USER'S MANUAL PG. 16)

9/18/87

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:
Wastes disposed of in unlined surface impoundment. Boring at this location showed no impervious layer underneath.

Ref 3, 13, 15, 20, 21

Method with highest score:
UNLINED SURFACE IMPOUNDMENTS.

HRS SCORE: 3 (USER'S MANUAL PGS. 16-17)

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:	TOXICITY	PERSISTENCE
LEAD	3	3
Chromium	3	3

REFERENCES 2, 19, AND 21, 26, 15

Compound with highest score:
LEAD, Chromium

HRS SCORE: 18 (USER'S MANUAL, PG 18)

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):
APPROX. 5600 CUBIC FEET OF SLOP OIL EMULSION WASTES (K049 LISTED RCRA WASTE) AND LEADED TANK BOTTOMS (K052 RCRA LISTED WASTES) WERE DISPOSED OF ON SITE PRIOR TO 1970.

(Ref 3, 13, 15)

HRS SCORE: 4 (USER'S MANUAL, PG. 19)
Basis of estimating and/or computing waste quantity:

JUNE 1, 1981 103(c) NOTIFICATION FROM TOSCO CORP.

REFERENCE 15

Rachel Bodal
9/18/87

* * *

5 TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

DRINKING, INDUSTRIAL, IRRIGATION. THE SPOKANE VALLEY-RATHDRUM PRAIRIE AQUIFER IS A DESIGNATED SOLE SOURCE AQUIFER. REFERENCES 5, 6, 7, 8, 16.

HRS SCORE: 3 (USER'S MANUAL, PG. 24)

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

DALE DRAPER, EARL SCHMIDT, AND FASMART WELLS LOCATED IN SW 1/4, SEC. 22, T 26N, R 43, W.M.

REFERENCES 3, 7, AND 22.

Distance to above well or building:

LESS THAN 500 FEET

REFERENCES 3, 7, AND 22.

HRS SCORE: 4 (USER'S MANUAL, PG. 25)

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

See Sheet 5B

Total = 201,545

REFERENCES 6, 7, AND 8, 23, 24, 25

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

1175.25 acres x 1.5 = 1763 people for food crops.

REFERENCE 8.

Total population served by ground water within a 3-mile radius:

203,308 people

HRS SCORE: 5 (USER'S MANUAL, PG. 27)

MATRIX SCORE: 40 (USER'S MANUAL, PG. 26)

[signature] 9/18/87

Tosco Corp - Spokane

6/11/87

GW used for DW within 3 miles of above site

Name	Pop
Spokane, Cy of - Central Ave	179,850
Pine Acres	20
Nelson Landscape	15
Spokane Surburban Water Co, Sys 3B	2170
Kaiser Alum - Mead	850
S+F Construction	2
Kaiser Alum - Mead Works, North	200
Wittkopf Trucking	6
Norcan Parts	5
Draper Tractor	3
Hahn Machinery	1
Pleasant Hills	24
Orcharchard Prairie	35
North Spokane Irrigation Dist # 8	2400
Spokane Humane Society	15
Whitworth Water	11899
Spokane Surburban Water Co, Sys 3A	4052
Total	201,545

Jeanette Badah
9/18/87

SURFACE WATER ROUTE

There is no downslope surface water within 3 miles of site. (Ref 3).

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Rationale for attributing the contaminants to the facility:

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

Name/description of nearest downslope surface water:

Average slope of terrain between facility and above-cited surface water body in percent:

Is the facility located either totally or partially in surface water?

9/16/87

Is the facility completely surrounded by areas of higher elevation?

1-Year 24-Hour Rainfall in Inches

Distance to Nearest Downslope Surface Water

Physical State of Waste

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Method with highest score:

9/18/87

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Compound with highest score:

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Basis of estimating and/or computing waste quantity:

* * *

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

9/18/87

Is there tidal influence?

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

9/18/87

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

Total population served:

Name/description of nearest of above water bodies:

Distance to above-cited intakes, measured in stream miles.

9/18/87

AIR ROUTE

[redacted] (no air data; route not scored)

1. **OBSERVED RELEASE**

Contaminants Detected:

Date And Location Of Detection Of Contaminants:

Methods Used To Detect The Contaminants:

Rationale For Attributing The Contaminants To The Site:

* * *

2. WASTE CHARACTERISTICS

Reactivity And Incompatibility

Most Reactive Compound:

[redacted]

Most Incompatible Pair Of Compounds:

9/18/87

TOXICITY

Most Toxic Compound:

HAZARDOUS WASTE QUANTITY

Total Quantity Of Hazardous Waste:

Basis Of Estimating And/Or Computing Waste Quantity:

* * *

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS

Circle Radius Used, Give Population, And Indicate How Determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

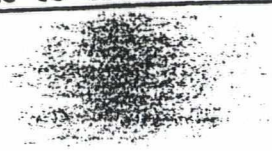
DISTANCE TO A SENSITIVE ENVIRONMENT

Distance to 5-Acre (Minimum) Coastal Wetland, If 2 Miles Or Less:

Distance To 5-Acre (Minimum) Freshwater Wetland, If 1 Mile Or Less:

9/16/85

Distance To Critical Habitat Of An Endangered Species, If 1 Mile Or Less:



LAND USE

Distance To Commercial/Industrial Area, If 1 Mile Or Less:

Distance To national Or State Park, Forest, Or Wildlife Reserve, If 2 Miles Or Less:

Distance To Residential Area, If 2 miles Or Less:

Distance To Agricultural Land In Production Within Past 5 years, If 1 Mile Or Less:

Distance To Prime Agricultural Land In Production Within Past 5 Years, If 2 Miles Or Less:

Is A Historic Or Landmark Site (National Register Or Historic Places And National Natural Landmarks) Within The View Of The Site?

9/10/87

FIRE AND EXPLOSION

(No known certified fire/explosion threat; route not scored)

1. CONTAINMENT

Hazardous Substances Present:

Type Of Containment, If Applicable:

* * *

2. WASTE CHARACTERISTICS

DIRECT EVIDENCE

Type Of Instrument And Measurements:

IGNITABILITY

Compound Used:

REACTIVITY

Most Reactive Compound:

INCOMPATIBILITY

Most Incompatible Pair Of Compounds:

* * *

9/18/87

HAZARDOUS WASTE QUANTITY

Total Quantity Of Hazardous Substances At The Facility:

Basis Of Estimating And/Or Computing Waste Quantity:

* * *

3. TARGETS

DISTANCE TO NEAREST POPULATION

DISTANCE TO NEAREST BUILDING

DISTANCE TO SENSITIVE ENVIRONMENT

Distance To Wetlands:

Distance To Critical Habitat:

LAND USE

Distance To Commercial/Industrial Area, If 1 Mile Or Less:

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Distance To National Or State Park, Forest, Or Wildlife Reserve, If 2 Miles Or Less:

Distance To Residential Area, If 2 Miles Or Less:

Distance To Agricultural Land In Production Within Past 5 years, If 1 Mile Or Less:

Distance To Prime Agricultural Land In Production Within Past 5 years, If 2 Miles Or Less:

Is A historic Or Landmark Site (National Register Or Historic Places And National Natural Landmarks) Within The View Of The Site?

POPULATION WITHIN 2-MILE RADIUS

BUILDINGS WITHIN 2-MILE RADIUS

9/18/87

REFERENCES

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2. Sax, N.I. 1984. Dangerous Properties of Industrial Materials. 6th Edition. Van Nostrand Rheinhold Co., New York.

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22. GOLDER ASSOCIATES - MAP LOCATING NEAREST WELLS - FROM REF. 3.

DB 9/16/87

References

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24. Telephone communication with Gary Lupfer, Whitworth Water Dist. #2, from David Bennett, EPA, 6/11/87.

25. Telephone communication with Phil Williams, City of Spokane, from David Bennett, EPA, 6/11/87

26. Code of Federal Regulations 40 Part 261, App. VIII

PTB
9/18/87